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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/315,068 05/20/99 HAYAKAWA

T 054431

EXAMINER

MM91/1101
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70HN T

ART UNIT

PAPER NUMBER

2881

DATE MAILED:

11/01/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/315,068

Applicant(s)

HAYAKAWA ET AL.

Examiner

Jeffrey N Zahn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2001 and 14 May 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Acknowledgments/Summary

The Amendments/Arguments and Election submitted by the Applicant and received at the USPTO on 14 May 2001 and 20 August 2001, respectively, have been entered as Paper No 8 and Paper No. 10, respectively. The Amendments/Arguments have been considered for purposes of this examination. Accordingly, the Specification has been amended and Claims 4-6 have been added. In addition, the Applicant has elected Claims 1-2 and 5-6 without traverse in response to a Restriction requirement, Paper No. 10.

Claims 1-6 are currently pending in this application. Claims 3 and 4 are withdrawn from consideration as being drawn to a nonelected group. Claims 1-2 and 5-6 are Finally Rejected for the reasons discussed below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiddymment et al. in view of Gokhale et al. and Erbert et al.
Fiddymment discloses a semiconductor laser (abstract) that includes a quantum well layer

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(4), an upper waveguide layer (5), and a lower waveguide layer (3); the said quantum well layer, upper and lower optical waveguide layers are nominally of material composition $\text{Ga}_{.39}\text{In}_{.61}\text{As}_{.88}\text{P}_{.12}$, p doped $\text{Ga}_{.17}\text{In}_{.83}\text{As}_{.36}\text{P}_{.64}$ and n doped $\text{Ga}_{.17}\text{In}_{.83}\text{As}_{.36}\text{P}_{.64}$ respectively (col. 5, lines 31-45); an upper cladding layer (7) that is selectively removed, via etching, up to the interface of the upper cladding layer and the upper optical waveguide layer (col. 6, lines 58-60; see also Fig. 5)

Regarding Claim 1, Fiddymment lacks upper and lower cladding layers formed of AlGaAs and an optical waveguide layer equal or greater than .25 μm in thickness. Gokhale teaches the use of aluminum free InGaAsP Quantum Wells and waveguides to improve performance of high power lasers by decreasing the internal losses (abstract and Fig. 1) and confinement factor effect for the Quantum Well and the Cladding as a function of waveguide thickness of .2 μm to 1.2 μm (Fig. 3; see also page 2268, "Design of BW Lasers") Therefore it would have been obvious to someone of ordinary skill in the art of semiconductor lasers at the time of the invention to specify an optical waveguide thickness of at least .25 μm to maintain the laser gain for the fundamental mode, traverse mode or both modes depending on the specific waveguide thickness and desired performance.

Erbert teaches the structure of Al-Free QW's in AlGaAs waveguides (abstract; see also Fig 1.) in order to reduce degradation of lasers containing Aluminum in the active region. In addition, it is well known in the art of lasers that a lower cladding is used to further absorb unwanted emissions of the QW region and further confine the laser guided within the waveguide structure. Therefore it would have been obvious to

someone of ordinary skill in the art of semiconductor lasers at the time of the invention to use AlGaAs as an upper and lower cladding layer to conform with conventional practice while making the QW free of Al to decrease the rate of laser degradation.

Regarding Claim 2, in addition to the discussion above relative to Claim 1, Fiddymment et al. discloses a semiconductor laser that includes an upper cladding layer of a ridge type construction. (7")

Regarding Claims 5 and 6, optimization within the prior art conditions or through routine experimentation is not inventive. MPEP § 2144.05. Here, the Applicant has optimized the thicknesses of the waveguide layers and cladding layers as disclosed and taught by the prior art as discussed above.

Response to Arguments

Applicant's arguments filed 14 May 2001 have been fully considered but they are not persuasive.

Regarding Claims 1-2, the Applicant argues that "...substituting AlGaAs for the InP cladding layer of Fiddymment...", (page 7, para. 2) is not suggested by the applied art. This argument is not persuasive because it fails to address the teachings of Erbert as discussed above. (regarding Claim 1)

In addition, the Applicant argues that Gokhale teaches a different advantage, i.e. reduction of free carrier absorption, than the Applicant's claimed invention, i.e. reducing residual loss in the active layer. (page 7, para. 3) In response to this argument, the fact that applicant has recognized another advantage which would flow naturally from

following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey N Zahn whose telephone number is 703-305-3443. The examiner can normally be reached on M-F: 8:30-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul M Dzierzynski can be reached on 703-308-4822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-

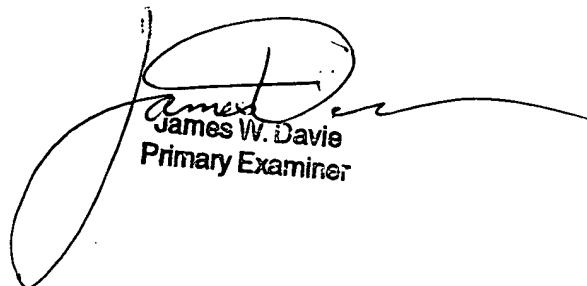
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308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Jeffrey Zahn
October 31, 2001



James W. Davie
Primary Examiner